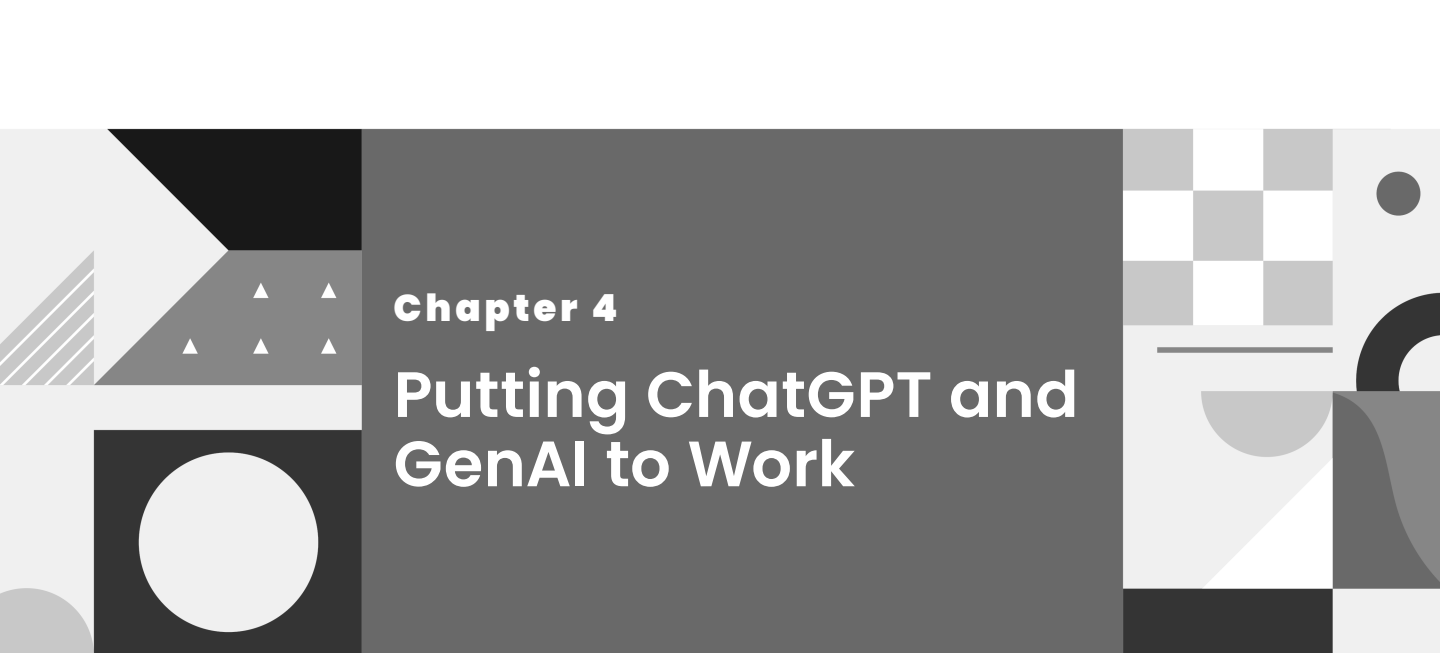




Chapter 4

Putting ChatGPT and GenAI to Work

The content of this chapter aligns with the following standards and indicators:

ISTE Student Standards

- 1.1.d Empowered Learner
- 1.3.d Knowledge Constructor
- 1.4.d Innovative Designer
- 1.5.d Computational Thinker

ISTE Educator Standards

- 2.1.a Learner
- 2.2.c Leader
- 2.3.b, 2.3.c Citizen
- 2.4.b Collaborator

WITH RESPONSIBLE USE and an understanding of the potential for bias and inaccuracies in AI responses, generative AI (GenAI) tools can transform student learning and enhance your workflow—just ask your colleagues. In a 2023 Study.com survey, teachers responded that they believed ChatGPT could help students build such skills as critical thinking (39%), problem-solving (38%), and data-analysis (32%). More than 25% mentioned ChatGPT aiding with editing skills, digital literacy, language learning, reading comprehension, and creativity. Although 43% of the respondents believed that the generative AI tool would make their jobs more difficult, the majority believed that it would make their lives easier.

Generative AI tools, such as ChatGPT, Google Gemini, Microsoft Bing, Claude 3, Microsoft Copilot, Perplexity, and YouChat, can streamline many of your time-consuming tasks, freeing you to work directly with your students or fellow educators instead. Whether you need to outline a lesson plan; create project ideas; try a new approach to a frequently taught topic; design a project that includes standards, relevant objectives, activities, and pacing; write a letter of recommendation or grant proposal; or draft an email asking for parent volunteers, give ChatGPT a prompt. It will generate content and ideas to help you. It's that simple—or it should be.

Nothing in life is perfect, however, and even AI can go askew sometimes, which is why crafting an effective prompt is a vital skill for you and your students. The more specifically you can guide an AI-powered tool with your prompts, the more focused its responses will be to your needs and the less adjusting the results will require. In this chapter, we'll discuss how to write prompts to get the best responses from GenAI tools, as well as look at ways to help students use generative AI tools at all grade levels.

Prompt Engineering

Prompt engineering is an essential skill that will help you and your students obtain the type of output that you are looking for from ChatGPT and similar tools. First and foremost, make a prompt clear, concise, and specific to what you want. Asking an open-ended question, such as *What is AI?*, will give you a lengthy and potentially very technical response, depending on your prompt's topic. Asking ChatGPT to limit its response to a given number of words or to provide specific examples will help you narrow its focus. A better way to create a prompt is to assign ChatGPT a role, include a specific grade level, and ask ChatGPT to explain a concept to students at that grade level. For example, use

the prompt *You are a fifth-grade teacher and you want to explain AI to your students. Provide a definition and three examples of AI that students would understand. Limit your response to 300 words.* A prompt like this is specific and concise and will leverage the full potential of ChatGPT.

▶▶▶▶ Work with your students to develop their prompt engineering skills: Have conversations about why prompt wording matters and how to phrase a strong prompt. With older students, you can test prompts in class and discuss their results, if ChatGPT or other GenAI tools are available. Phrasing a prompt to produce the needed output requires that students think at higher levels and focus on specifics rather than general questions. You can push students to build critical thinking skills by working on creating prompts and analyzing the output from ChatGPT and other similar tools. How do they differ and what do students notice?

BETTER PROMPT ENGINEERING

Prompt engineering matters, but how can you improve your prompts? Be clear, concise, and specific.

Consider a couple prompt makeovers:

Weak: *What is artificial intelligence?*

Stronger: *In 300 words, what is AI and can you provide at least three examples of how AI is used?*

Strongest: *In 100 words, explain what AI is, and provide an example for educators and one that is used in daily life.*

Weak: *How does AI work?*

Stronger: *Your role is a [content/grade level] classroom teacher. Explain how AI works so that a fifth grader would understand it, and provide at least 3 examples and 3 follow-up questions for them to discuss.*

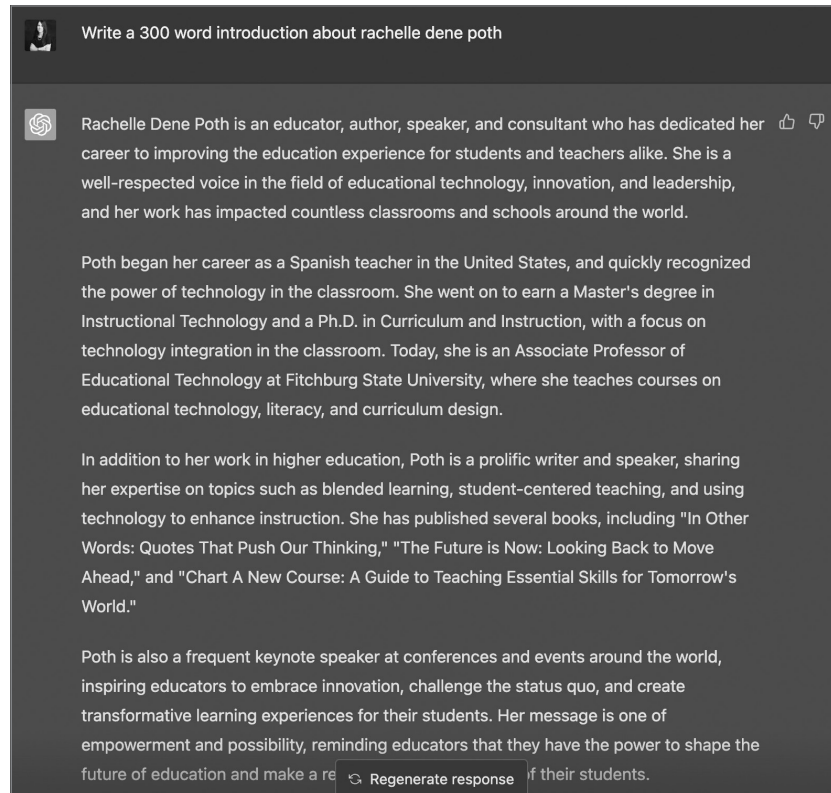
These are just a couple examples, but they can be good starting points to have students evaluate. If possible, test out the responses that ChatGPT or another LLM generates.

At the same time, you can teach students to assess the reliability of the information produced by their prompts (both strong and weak ones). Was the generated response accurate and relevant, or was the AI tool hallucinating? In AI terms, *hallucinations* are inaccurate results (sometimes wildly so) that an algorithm generates and presents as fact. They happen because AI models are trained to predict words that match your prompt, but they do not have logic or reasoning to be able to identify inconsistencies in facts. When I prompted ChatGPT to write my bio, for example, the output read very well and

convincingly, however, it was not fully based on facts (**Figure 4.1**). It hallucinated a PhD for me as well as a professorship—neither of which I had at that time. Similarly, prompting an AI image generator with *create a picture of a moose in a pickup truck* might result in an image with a moose body embedded in the hood of the truck rather than the animal sitting in the driver's seat or truck bed as you expected.

FIGURE 4.1

When I prompted ChatGPT to write a 300-word bio about me, I received this convincing but creatively inaccurate response.



Sharing ineffective prompts and hallucinations creates an opportunity to highlight the importance of focusing on evaluating resources and also to discuss why there might be errors. If you have a subscription to ChatGPT Plus, you may encounter this phenomenon less because GPT-4, on which it's based, has been shown to have significantly lower rates of hallucinations compared with prior versions of GPT (Wodecki, 2023).

EDUCATOR'S PERSPECTIVE: PREP PROMPTS FOR PHYSICS

By Dr. Michael Harvey, Physics teacher, Marlborough Boys College, Blenheim, New Zealand

I am a physics teacher who wants to teach my students about kinematics, especially projectile motion. I decide to use Chat GPT-4, a generative AI tool that can create decision trees and flowcharts based on natural language prompts. I ask students to write a prompt using the PREP model, which stands for Prompt, Role, Explicit, and Parameters. The students come up with this prompt:

You are a level 2 NCEA student studying the level 2 mechanical systems achievement standard. Create a decision tree for the use of the four kinematic equations on motion. The decision tree must find each of the unknown variables, if you have the other variables.

I type the prompt into Bing AI chat in the creative mode and show the students the result. The tool generates a decision tree that matches the NZ curriculum and helps the students choose which equation to use for different situations. The students are impressed by how Chat GPT-4 can understand their prompt and create a useful diagram.

Next, I ask the students to create a flowchart based on the decision tree. I explain that a flowchart is another way of showing the steps of a process or algorithm. The students use Chat GPT-4 again to generate a flowchart that follows the same logic as the decision tree. They also see an example of how to use the flowchart to solve kinematic problems.

The lesson concludes by asking the students to reflect on how Chat GPT-4 can help them learn physics concepts and skills. I also encourage them to explore other applications of generative AI in education and beyond.

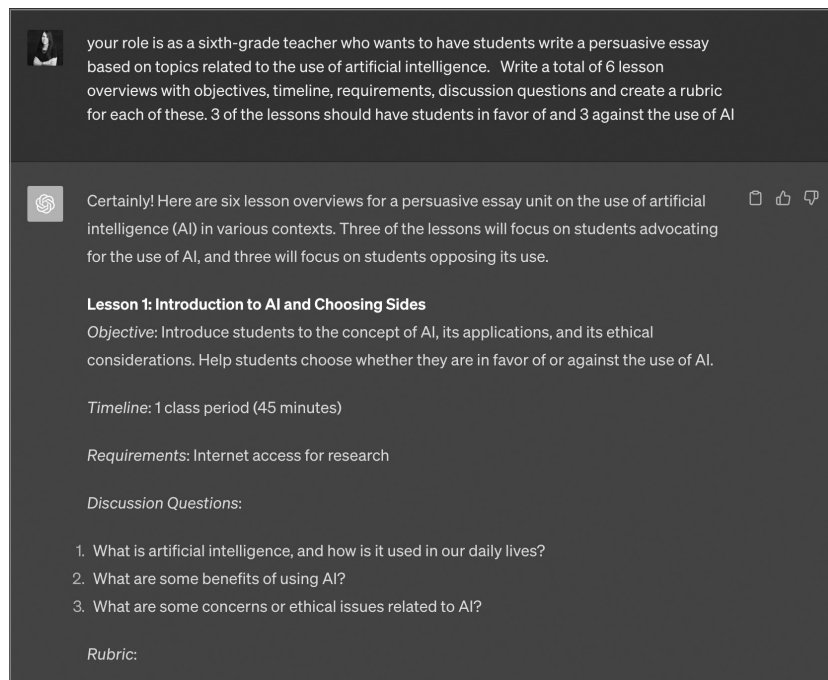
Practice Your Prompts

The best way to improve your prompts is with practice. Think about some of the tasks that you ask students to do, type those into ChatGPT, and then evaluate the responses you receive. Are they accurate and relevant? Do they provide the information you look for from students? If not, revise the prompt you entered to get it closer to your intended result.

Another great way to practice prompts is to ask ChatGPT to generate a project overview, complete with a rubric and description of the required format and the specific tasks that students have to complete (**Figure 4.2**). You could even ask it to incorporate specific ISTE Student Standards or content area standards, to provide some discussion questions, or to add activities for enrichment. Go a step further and prompt it to generate a timeline with estimated deadlines to help students learn how to pace their work.

FIGURE 4.2

An example of a clear prompt with a role assigned to ChatGPT and the output generated



While having what usually takes you hours appear in minutes is exciting, be sure to check the results. Is the information accurate? Is the project like something that you would create and then share with your students? If it meets your standards, you can then add your own authentic and personalized content that best meets your students' needs and interests. If you're consistently dissatisfied with the accuracy of the free version's results, ChatGPT Plus might be worth its subscription price. I have this version and it is well worth it. The GPT-4 model that underlies it is more powerful and provides greater accuracy. Planning a good prompt takes a lot less time than planning a full lesson, giving you time to spend working with students and looking for additional resources or ideas for your classroom.

Similarly, you could use ChatGPT as a time-saver to help you structure your content when writing a syllabus for a new class. If you have an outline of a course description, enter it into ChatGPT and prompt it to add more details, write a longer introduction, or include relevant standards, for example. Using it for this purpose simply enhances what you already have and casts AI as your assistant.

▶▶▶▶ Need more quick ideas for prompt practice? Ask ChatGPT to create a fun story to hook students into a lesson, or to write word problems using a theme or in the tone of a

character for a math class. Ask it to personify a character from history and describe an event or engage in a conversation with students. These are only a few of the many ways that you can use ChatGPT not only to create and extend learning but also teach students about the power of generative AI tools.

Twenty Prompts to Save You Time

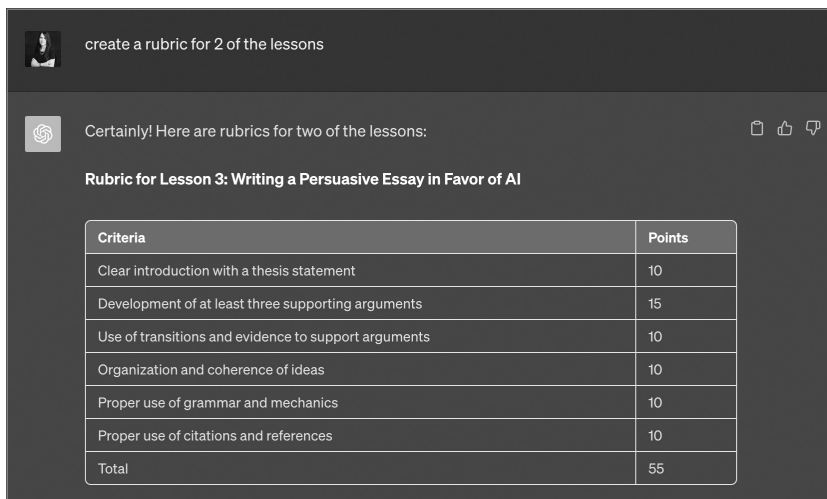
Here are twenty prompt ideas you can try that can help with the creation of class materials, communications, and more. The prompts will work for any grade level with ChatGPT, Google Gemini, Microsoft Copilot, Claude 3, Perplexity, and other generative AI tools.

- ◆ **Class intro:** *Write an introduction to [class] in the theme of [you pick] or the voice/narrative style of [you pick].*
- ◆ **Course syllabus:** *Create a syllabus for [course]. The course is [length] and the main topics are [list topics].* Or have it revise or provide feedback for a syllabus you have.
- ◆ **Build relationships:** *Provide 10 activities or fun icebreakers for getting to know students in the [grade level].*
- ◆ **Differentiation and scaffolding:** *For teaching about [topic], provide 10 options for differentiating instruction for students with varying learning needs. Scaffold: Create a guide with step-by-step instructions for students about [topic/lesson] and include pacing. Be sure to include length of class periods or a specific time for the activities.*
- ◆ **Updates and newsletters:** *Write an email for parents that shares information about [class topic]. Newsletter: Write a class newsletter that includes...* Add to the prompt specific dates, events, and key points that you want the newsletter to include.
- ◆ **Activity and game creation:** *Create 5 activities for my students about [topic]. Games: Create a game about [topic] and for [grade level] that accommodates [number of players].* You can specify whether the responses should include technology or be hands-on activities and games.
- ◆ **Creative lesson ideas:** *Provide 5 lesson plan ideas for teaching [topic] to [grade] students.* You also can include a reference to standards or any specific requirements that you have, such as class period length and activity types.
- ◆ **Lesson hook:** *Create a hook to a lesson on [topic] in the voice of [a famous character or some other fun theme].*

- ◆ **Lesson planning:** Write a lesson plan for [grade level] on [topic] with standards, learning objectives, class activities, project ideas, and a short assessment. You can also ask it to create enrichment and lesson extension activities.
- ◆ **Projects:** Generate 10 ideas for student projects on [topic] that include assessments, reflection questions, and potential options for tools. You can provide parameters such as project type, standards, and length of project, as well.
- ◆ **Quiz creation:** Create a [number of questions] quiz that includes open-ended, true/false, and multiple-choice questions. Also include an answer key and generate sample open-ended responses.
- ◆ **Teaching strategies:** Provide a list of 5 teaching strategies that can be used to boost student engagement and that differentiate for student ability levels in a lesson on [topic].
- ◆ **Reading comprehension:** Paste an article into ChatGPT, then prompt Generate 10 questions [true/false, multiple choice, discussion]. You could also request follow-up activities.
- ◆ **Presentation on new topic:** Create an outline for a 10-slide presentation that includes key points, timeline, and discussion questions on [topic] for [grade level].
- ◆ **Worksheet:** Create a worksheet on [topic] for a [grade level/course]. Include open-ended, matching, and a variety of question types and tasks.
- ◆ **Rubric creation:** Create a rubric for a project on [topic] with point breakdowns for each category and descriptions. You can also provide the categories or point values (**Figure 4.3**).

FIGURE 4.3

A simple rubric generated by ChatGPT with criteria and point values



create a rubric for 2 of the lessons

Certainly! Here are rubrics for two of the lessons:

Rubric for Lesson 3: Writing a Persuasive Essay in Favor of AI

Criteria	Points
Clear introduction with a thesis statement	10
Development of at least three supporting arguments	15
Use of transitions and evidence to support arguments	10
Organization and coherence of ideas	10
Proper use of grammar and mechanics	10
Proper use of citations and references	10
Total	55

- ◆ **Feedback generation:** *Generate 3–5 responses to provide student feedback based on [this response]. You would need to paste in the student’s response. Remember to remove any personally identifiable information.*
- ◆ **Personal assistance:** *Generate questions to help me better understand [topic]. Or, Provide alternate ways of presenting [topic] to students.*
- ◆ **Saving time:** *Summarize [paste in an article or something that you have written, or with GPT-4 Turbo, upload a document] and generate [number and type of] questions.*
- ◆ **Creative and off-beat lesson ideas:** *I try to make learning easier by using mnemonics or music. Ideas: Write a song about [topic] in [style of] that will teach students about [topic]. Or, You are [famous person being studied] and you are engaging in a conversation or debate with [another famous person]. Select people from varying backgrounds, eras, fields of work, and more.*

When you create an effective prompt, save it! I’ve collected a list of hundreds of prompts, and it’s still growing. You can also find a huge variety of prompt lists online in blogs or in books. Explore the prompts shared by TeacherMade, the Teaching Channel, and ClassPoint for some content-specific prompts as well as prompts for clerical tasks. Find what works for you and then generate your own!

EDUCATOR’S PERSPECTIVE: AN ENGINEERING CHALLENGE FOR CHATGPT

By Jennifer Bond, MS Design Tech teacher and Innovative Teaching and Learning Specialist, Michigan

I introduced ChatGPT to my middle school Design Tech students, and I gave them a demo of some of the common ways people could use ChatGPT, including writing song lyrics, creating essays, forming a weekly menu for family dinners, as well as taking suggestions from students in the class. Then I created a prompt that asked ChatGPT to create an engineering challenge for a class of middle schoolers that incorporated specific materials (which I had ready to go on a table in the classroom). I also set a time-limit of 20 minutes, and I asked it to be themed patriotic, as we completed the challenge on September 11. ChatGPT generated somewhat different challenges each class period ranging from patriotic towers to bridges and parade floats. In addition, we asked ChatGPT to create a rubric so that the students could self-assess their design when they were done with it.

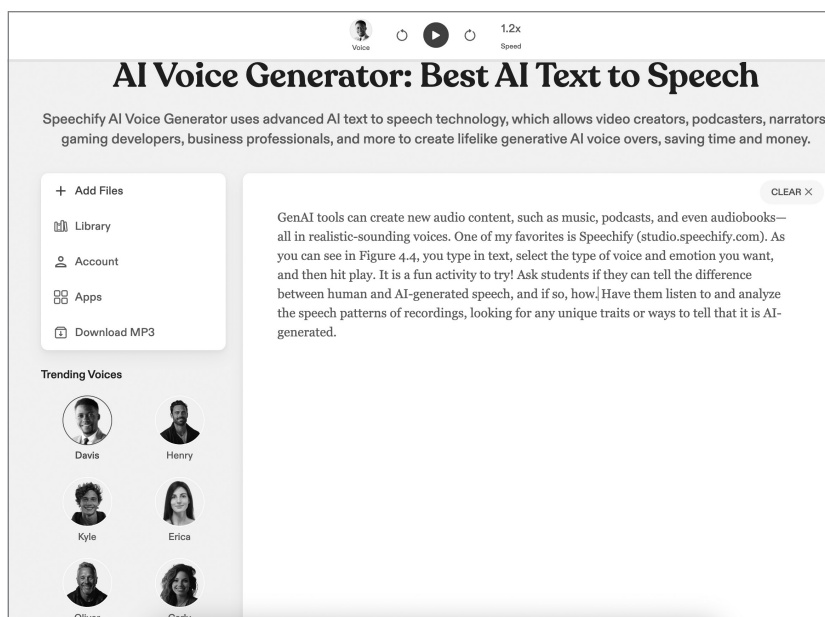
As with all new technologies, we need to make sure that we explore the benefits and concerns. Don’t be afraid to explore these tools because as educators, we need to be prepared to guide our students and help them understand the technologies that may become an even bigger part of their future.

Generative AI: Beyond Text Creation

As we discussed in Chapter 1, *generative AI* refers to a class of AI models and systems that use algorithms to learn patterns from existing data, and then apply those patterns to generate new content in a process called *generative modeling*. So far, we've focused on text, but generative AI tools can also create images, audio, video, and more. There are many opportunities to test out creativity and have fun exploring and learning about the capabilities of generative AI. Beyond text-based uses we've talked about, GenAI can help expand your creativity and that of your students in many areas and ways, such as:

- ◆ ▶▶▶▶ **Audio generation:** GenAI tools can create new audio content, such as music, podcasts, and even audiobooks—all in realistic-sounding voices. One of my favorites is Speechify (studio.speechify.com). As you can see in **Figure 4.4**, you type in text, select the type of voice and emotion you want, and then hit play. It is a fun activity to try! Ask students if they can tell the difference between human and AI-generated speech, and if so, how? Have them listen to and analyze the speech patterns of recordings, looking for any unique traits or ways to tell that it is AI-generated.

FIGURE 4.4
Designing a fun voice to read text is a great way to engage students in a lesson while learning about AI.



- ◆ **Image analysis:** You can upload an image to ChatGPT Plus (the GPT-4-based paid version), and prompt the platform to analyze it. In response, ChatGPT Plus will describe as much as it can about the possible location and time of day depicted, as well as detail why it came to its conclusions.
- ◆ **Image editing:** GenAI can create new images, artwork, and visual designs. Depending on the tool, it can analyze an image and create a new image using *style transfer*, which means applying the artistic style of one image to another. For example, students could choose a painter, upload a photo, and have the AI tool generate their image in the painter's style. What type of mix is created when selfie meets Sergeant? Using this activity in any class can be an easy way to bring in some AI lessons. Generative Fill features can add content to extend an image, remove objects and fill in “behind” them, and more. For tools with these options, try Canva and even ChatGPT Plus.
- ◆ **Image generation:** With AI-powered tools, such as DALL•E, Craiyon, and others, you can create realistic or fantastical images in the style of photographs, paintings, cartoons, specific artists, and more from text prompts or drawings (**Figure 4.5**). DALL•E 3 is now available through ChatGPT Plus, and Canva also recently added a text-to-image generator. A fun activity is to use Craiyon or another tool to write a silly prompt with a few unrelated objects, characters, and themes and see what the software generates (**Figure 4.6**). You can then use this as a hook for a lesson or a prompt, having students write or discuss what they see. Some students hesitate in drawing, and this spark of inspiration might be just what they need. Other tools like Adobe Firefly and Microsoft Designer enable you to type in a text prompt and have a work of art or a 3D avatar generated. Microsoft Designer functions similarly to Mad Libs: fill in the blank with random words and descriptors, and it generates a 3D character!

FIGURE 4.5

The prompt provided and the results generated by DALL•E. The four images can spark fun conversations.

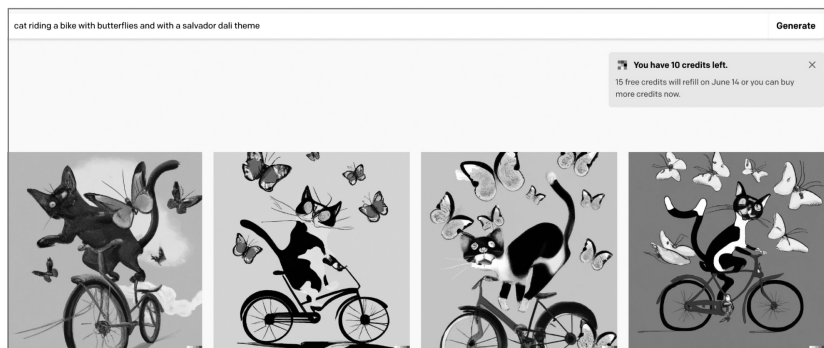


FIGURE 4.6

The prompt provided and image generated by Craiyon. As a fun lesson hook, have students describe it.



- ◆ **Music:** AI tools can create songs and even entire musical compositions. For students to retain content, they need authentic and meaningful ways to practice. Creating mnemonics or short songs that are catchy can be a great way for students to remember the content. Sometimes it is tough to be creative, but by inputting the text and prompting ChatGPT or other generative AI, you can create something fun for learning. Another tool to explore is Stable Audio, which enables you to create a song or sound based on text prompts. With it, students can make custom backgrounds for videos or podcasts, giving them the chance to be the creators!
- ◆ **Video generation:** With GenAI tools, you can create new video content, such as movies, TV shows, and commercials, including realistic videos of people and objects. Educators can generate an AI avatar with voiceovers in more than 120 languages using a tool such as Synthesia or D-ID. Both enable you to create a video from a photo, choose from one of their avatars, or generate a cartoon avatar. Plus, OpenAI is working

on Sora, a tool that creates videos from text prompts, but at this writing no release date has been announced. Diving in and creating with the tools and modeling their use for students is important. Students can make multimedia presentations to explore AI. It builds content skills but is also a great way to collaborate, create, and innovate. It can be used in different grade levels and content areas and help with sparking curiosity and creativity in learning.

Generative AI has shown incredible benefits for creativity and innovation, but it also presents challenges related to ethical considerations, bias, and the potential for producing misleading or harmful content. Some are questioning copyright issues related to the images that are being used for training AI, as well. In early 2023, Getty Images took Stability AI, the creator of Stable Diffusion (an image generation tool), to court in the U.K., claiming Stability AI used Getty's copyrighted image library for training without consent; Getty also filed a similar copyright infringement lawsuit in the United States (David, 2023). In September of 2023, the Authors Guild filed a lawsuit against OpenAI, alleging that ChatGPT had been trained on their work without their consent or knowledge, thus violating copyright (Wiggers, 2023). In contrast, Adobe has pledged a "creators first" approach to ethically source training data for its AI tools (including compensation and credit mechanisms for contributors) and to combat bias through rigorous oversight (Adobe, 2024a, 2024b). The U.S. Copyright Office is monitoring this emerging area and is asking for input on the issue; however, there have not yet been clearly defined court decisions to provide insight (Wiggers, 2023).

▶▶▶ What are your thoughts, and what do your students think? Bring these issues into your classroom. Start a discussion or a debate with students that focuses on whether tech companies should be able to use images or text from other sources as training data, without the consent of the creator/owner. For example, should images that are found online become part of training data so that generative AI tools have access to more in order to have more capabilities? Students can also research to find additional examples and share with classmates.

Ideas for Using Generative AI in the Classroom

As technology continues to advance, the capabilities of generative AI are expected to expand, impacting various industries and aspects of our lives. This is why we need to create opportunities for students in all grades and content areas to explore the capabilities

of this technology, while reinforcing responsible usage themes and digital literacy. As educators, it is our responsibility to prepare students for their future by equipping them with knowledge and skills to navigate the world of AI effectively and ethically. To do this, we have to create and explore with them. Consider your assignments and activities carefully. Ask yourself: Can what you're asking for be accomplished quickly by ChatGPT or another generative AI tool without substantive student engagement? If so, rethink the activity. Just as if something you ask is "Google-able," then you're not asking the right question! To help you get started, the sections that follow offer activity suggestions, prompts, and ideas for a variety of content areas across all grade levels.

❖ Activities for Elementary or Middle School

You can use GenAI tools not only to teach students about the power of this technology but also to enhance their learning experience and supplement typical course materials. The following ideas work as activities for students to explore on their own or as a team. Note, also, that you can use ChatGPT (as suggested) or a similar tool. As a fun class activity, involve students in selecting which tool to use for these activities.

- ◆ **Language arts class:** To spark young students' creativity, prompt ChatGPT to generate a story beginning or characters based on some related keywords, then ask students to continue the story. This is a fun and engaging way to encourage students to convey their ideas and learning, as well as exercise their imagination. You could provide ChatGPT with some of a reading that you have provided for students and then upload the document or PDF (if you have access to a paid version). Ask it to generate a new story, create discussion questions, or take on the role of one of the characters and write a narrative about the character for students to read.
- ◆ **Storytelling:** Ask students to suggest an animal, color, random object, setting, and any other item they can think of, and then prompt ChatGPT to generate a short story incorporating those suggestions. (You could use the vocabulary specific to your lesson.) Once the story is ready, ask students to read it and discuss how well the AI tool generated it. To extend the lesson, break the class into groups and ask students to continue the story.
 - For older students, use ChatGPT to generate a few stories and share those with students to read in class and discuss. Students can learn to evaluate the writing style of AI and practice differentiating between AI- and human-written text. As students analyze the story, they develop their critical thinking skills.

- Have students work together with ChatGPT to create collaborative stories. They can take turns adding sentences and see how the AI contributes to the narrative as “co-author.” This activity introduces students to GenAI’s capabilities and possible limitations while enhancing student creativity and teamwork.
- ◆ **Character interviews:** Have students choose a character from a story they are reading or one they have written themselves and prepare interview questions to ask the character. Enter parts of the story into the prompt along with instructions for ChatGPT to portray the character while students conduct an interview. An activity like this will help students think deeply about the chosen character’s motivations, traits, and development, enhancing their comprehension and analytical skills. It will also help connect them to the story in authentic, meaningful ways.
- ◆ **Spelling and grammar practice:** Use ChatGPT to create an interactive spelling activity or grammar exercises based on specific content or focus areas for your students. For instance, you could prompt ChatGPT to generate a certain number of sentences with errors, and then ask students to identify and correct these mistakes. Or, have students create sentences, and then explore how AI can assist in proofreading and editing their written work. Some questions to consider are whether using it for this purpose was efficient and whether the output from ChatGPT was error-free. Ask students if they can tell whether the sentences were created by AI or not. Why or why not? An extension would be to use Grammarly to explore how AI analyzes the writing and provides recommendations, and then compare.
- ◆ **History and social studies:** Use ChatGPT to create an interview between two historical figures being studied, or select a famous event in history and ask ChatGPT to predict how that event might change if it occurred today or in another time period. If ChatGPT or a similar tool is available in the classroom, involve students in creating additional questions to engage in a conversation. If it’s not, create the prompt and generate the output to then share with the class.
- ◆ **Math:** Have ChatGPT act as the quiz creator or personal tutor for math quizzes or flash-card-style exercises. Students can ask ChatGPT to generate random math questions within a specific topic or to create questions at a certain difficulty level to help students build their skills. This gamifies math practice and helps students reinforce their mathematical concepts while (hopefully) having fun. You can also provide an incorrect solution to problems and test if ChatGPT catches it and explains the correct answer. As a follow-up, ask it to then generate additional practice problems for students to work through. (Be careful, though; ChatGPT has made multiple mistakes when I have used it for math.)

Activities for Middle School and High School

To bring learning to life and make it more meaningful, it is important to show older students the capability of AI technologies in their everyday lives. We want them to value their learning experience—not just consume content but also create. With quick adjustments, you can use the ideas from the previous section with higher-level students. In addition, try the following.

- ◆ **Science:** Ask ChatGPT or other generative AI tool to provide prompts with which students can simulate virtual science experiments. To get started, prompt ChatGPT to design different scenarios for students to explore. For instance, if students are studying photosynthesis, ask it to create examples for students to process as they build their knowledge. For a course on chemistry or physics, prompt it to create a challenge or experiment (or several) based on a relevant topic such as chemical reactions or design and engineering challenges, and ask students to explain how they would work through the experiment, or design an experiment based on the parameters. For example, ChatGPT might respond, “Simulate the trajectory of a projectile launched at varying angles and velocities. How do these parameters affect height, range, and time of flight?” These ideas would help spark curiosity and creativity in learning and also give students the chance to reflect on what they learned in the process. Another idea is to assign ChatGPT the role of a *[content area]* educator, teaching about *[topic]*, and ask it to generate scenarios or discussion topics for students to consider or projects for them to design, focused on a particular concept.
- ◆ **Social studies:** Few tools can bring history to life and increase engagement like AI. For example, students can use Hello History to select a persona from a variety of historical figures and engage in a virtual conversation with it. Similarly, you could set up a historical role-play activity where students interact or debate with AI-generated historical figures—either as modern-day students or playing a role contemporary with their selected historical persona—to gain insights into different perspectives on events of historical significance. Students can ask questions, prompt ChatGPT with a specific role or character from history, and have a chat to see what it comes up with. With these ideas and more, students can learn about specific people, events, or time periods in history.
- ◆ **World languages:** Students sometimes are a bit hesitant to speak in front of their classmates, especially when they’re building language skills. Instead, get students involved in simulated conversations in the target language with a chatbot, ChatGPT,

or other generative AI tool. By removing the fear of judgmental peers, chatbot conversations will help students develop skill, comfort, and confidence in speaking, which with practice will transfer over into the real classroom space.

Activities for High School

For a long time, I thought of myself as *just* a Spanish teacher, and as such I could not address topics like AI in my classroom. I've since realized that we *all* have an obligation to help our students understand these technologies as they emerge—no matter what our content specialty. In some manner, *all* students will encounter AI in their future lives, not only those whose goal is to code the algorithms that power it. So why not help students learn about AI from as many perspectives as possible while they are in our classrooms? There are many ways we can tweak our lessons to highlight AI and its benefits. Here are just a few examples that you can use or adapt to your specific content area to make them relevant, authentic, and meaningful for your students.

- ◆ **Arts and design:** Prompt ChatGPT to compare art styles or to predict how two artists or designers might create something new that merges their styles. After the response is received, students can then use the information to make their own designs. Students could create a prompt that focuses on specific artists or art styles and ask ChatGPT to create a new style that merges those specific artists. Then task students to use their knowledge of art styles with the information from ChatGPT to create a new work of art and then discuss how they created it. The use of generative AI tools such as Adobe Firefly is also beneficial for exploring art and using it as a model to have students design in.
- ◆ **Computer science:** Use ChatGPT to write lines of code with a specific number of errors for students to debug and explain why the code will not work. Students can explain what is wrong with the algorithm and then work individually or together to debug it. Another idea is to have students write their own lines of code and ask ChatGPT to review and/or debug the lines of code that they have written, pointing out errors and alternative solutions. Of course, adhering to age requirements with these tools is essential. Depending on students' ages, they could share the code with their teacher, who can then complete the ChatGPT task. An activity like this can facilitate conversations between students about coding and how to identify errors, as well as lead to greater understanding of the limitations and benefits of using AI-powered technologies.

- ◆ **Culinary arts:** Use AI to generate recipes from a random list of food items. Students can evaluate the recipe that it creates and discuss the healthiness of the recipe, potential taste, and preparation involved, and perhaps then create their own similar recipes or come up with a new idea for a restaurant. Students could also use ChatGPT to ask for suggestions for food presentation or complementary dishes for a meal. A fun activity might also be to use some generative AI tools to design ads or menus for a restaurant that students are creating.
- ◆ **Economics:** Use AI to simulate stock market scenarios to help students understand supply-and-demand dynamics and economic decision-making. Create some prompts to guide a discussion, or prompt ChatGPT to come up with interview questions and scenarios for students to apply their learning. For example, you could use a prompt like this: *Provide a list of 5 teaching strategies that can be used to boost engagement and that help educators provide differentiation for student ability levels in a lesson on [topic from the course].*
- ◆ **Literature:** For more advanced courses and readings, provide excerpts from the reading to ChatGPT (or similar tool), and ask it to generate discussion questions on the passage or to generate prompts for students to complete a literary analysis. Depending on the types of prompts that are generated, this activity could stimulate critical thinking and class discussions—whether on the topic of the reading or to evaluate the AI output. It is also fun to task an AI tool with a certain theme or character to engage students more in learning. A student could prompt, for example: *So, Ahab, what is with your white whale obsession?* As a Spanish teacher, I might use it to interview Don Quixote and have students provide questions to ask. Use AI as a way to learn more about the setting of a novel by asking for a more detailed explanation or to write an adjusted story by changing the time period or setting of the story and then compare.
- ◆ **Music:** There is a ton of potential for exploring generative AI when it comes to music. Using the Human vs AI Test from Tidio (tidio.com/blog/ai-test), have students decide whether the music files were created by human or AI. Or, shift students to being creators and have them explore using AI to generate a music composition. They can experiment with different sounds and melodies, gaining insights into music theory and composition. Provide a prompt that asks the AI tool to merge the style of one artist with the style of another to write a song; students can see what it comes up with and then have a discussion about it. Some tools, such as MagicSchool AI, offer a song generator that can be really fun to test out—especially with a good mix of words and themes.

Time-saving Ideas for Teachers

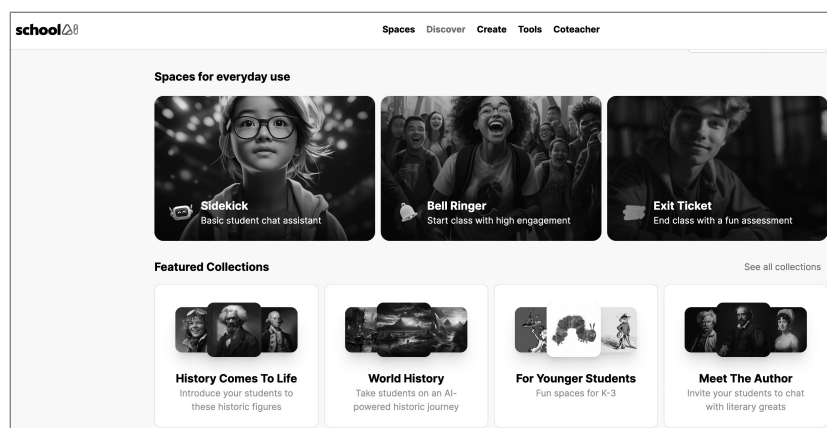
Chapter 3 introduced twelve of my favorite time-saving tools but still only scratched the surface. AI-powered tools can help you with editing, convert audio to text so you can speak your revisions rather than type, create presentations and other instructional materials for use in the classroom, and more. Sometimes you just need generative AI to create a basic design for you; then you can focus on the best content to add to meet your students' needs. The following list offers more suggestions for time-saving ways to use AI and tools to try. (Remember, of course, to always review the AI-generated content for appropriateness and accuracy.)

- ◆ **Assessment tools:** In Chapter 3, I shared examples of how easy it is to generate a variety of assessments and lessons or presentations—and there are still more tools to help you! In my language classroom, for example, I want students to speak and write in the language, but sometimes doing this in front of others is uncomfortable for them. With a tool like Snorkl, I can create prompts, tell the AI what I want students to do, and opt to have AI-generated feedback provided. Students can even download their recordings for use in creating a podcast or a multimedia presentation to represent their learning. Give it a try as a way to better understand what your students are thinking and to be able to provide them with timely feedback.
- ◆ **Research assistance:** I have started to think of ChatGPT, Google Gemini, Microsoft Bing, Claude 3, Perplexity, Copilot, YouChat, and other commonly used chatbots as research assistants. Based on GPT-4 (the top AI model as of this writing), Perplexity can respond to speech or text prompts to research whatever you need, for example. The answers it provides include links to various articles that it referenced, as well as images. You can also create your own AI profile so that it will provide you with more personalized answers. (When adding the app to my phone, it provided information about data safety and a reminder that the app may share data types with third parties and collect the data but that it is encrypted and you can request that your data be deleted.)
 - ▶▶▶▶ If you're interested in creating a personal chatbot trained on your own data, you can try out Zapier and Dante AI. For example, I created a chatbot for my website with Dante AI; I uploaded links and documents, and it generated a chatbot that can provide responses based on my content. When someone visits my site now, they can more easily find information or research topics with the help of my chatbot.
- ◆ ▶▶▶▶ **Lesson hooks:** Using generative AI tools to create images can be a great way to spark interest and hook students into the lesson. Adobe Firefly, DALL•E 3, Midjourney,

and Craiyon are at the top of my list and the ones that I have used most frequently. Based on your prompt—either a simple or a detailed text description—each tool generates one or more images. There are text effects, and you can use many of the other tools available. In my language classroom, I often ask students to give me some prompts for DALL•E based on what we’re learning and then have my students describe the resulting image in Spanish. It’s a fun way to keep learning going and also learn about AI. You can use generated images (from your prompts or students’) to engage students in discussion, prompt them to write a description, talk about what they see, and more.

◆ **Lesson materials:** Brisk Teaching, Curipod, Diffit, Eduaide, fobizz AI, LessonPlans. AI, MagicSchool AI, SchoolAI, Schemely, and Twee are just a few of the many tools for designing lesson plans, educational resources, and instructional materials. Brisk is a free Google Chrome extension that enables educators to provide feedback, inspect student writing, develop educational materials, and level and translate texts to meet their students’ needs without leaving their current workflow. With Twee, for example, English teachers can generate dialogues and stories, create different question types, and even provide a URL for a YouTube video to have questions created. With Diffit, you can select from a variety of resources such as Google documents, presentations, Frayer model, and more for students to engage with the content. It also provides options for adjusting the Lexile level for students, and you can edit all of the content that has been generated. A favorite in my class has been SchoolAI, which has some great options for students to engage in a chat with famous people such as Alan Turing, Frida Kahlo, George Washington, Harriet Tubman, and more. Or, you can create a “Space” and design the type of chat for students to engage in (**Figure 4.7**).

FIGURE 4.7
SchoolAI offers topics for educators and students to explore through chat, or you can create your own Spaces.



- In addition to these tools (many of which are free), I have used ChatGPT to generate ideas and to evaluate and potentially revise content I wrote, simply to test its reliability. For example, you can provide it with one of your prior lesson plans and prompt it to include additional activities, project ideas, and assessments. These tools also include language translation capabilities, templates, and many resources to help you more quickly create more interactive and engaging lessons. We started with Curipod, and my students loved it. I noticed a boost in student engagement, and it was way more interactive for them.
- With Schemely, you can create a lesson plan or even a whole course. For lesson plans, you can prompt Schemely to include a slide presentation, Quizlet flashcards, a Kahoot! quiz, a YouTube video link, a variety of activities, assessments, and ideas for differentiation. Like EduaideAI, Schemely was built by educators who understand the needs of teachers and students; developers of both platforms continue to seek feedback to improve what they provide.
- ◆ **Presentations:** If you struggle with making presentations, generative AI can help you generate visually engaging and interactive presentations beyond what you can do with traditional tools. At the same time, they enable you to explore and learn about the potential of AI and share that with your students or colleagues. Canva, Tome, Slidesgo, and SlidesPilot are in my regular lineup. For comparison, I created the same presentation using each one to see how their results differed in design and in content, as well as if one was more accurate than the others. Also, I looked for any negatives, such as generating images that represented only one gender or ethnicity, completely unrelated images, inappropriate images for the target age group, or hallucinations. I was curious to see how my prompt was analyzed and used to generate my presentation (**Figure 4.8**). Each had a unique style ranging from a basic presentation to a more professional one (Canva and SlidesPilot), or very visually engaging graphics to coincide with the topic (Tome).



FIGURE 4.8

An example of my presentation created using Tome, for a case study assignment

Be sure to check out the resources list in Appendix B for additional ideas for exploring AI and the many generative AI tools available. Scan the QR code at the end of the chapter to access a Wakelet-based collection with a list of tools to explore. The list will continue to be updated as tools become available or new features are added over time.

Study Aids for Students to Explore

Whether you are continuing your own learning by taking courses, are working on advanced degrees, or would like to offer your students some new study aids, the following AI tools can help. Be sure, however, to always verify the sites used and age requirements before recommending them to your students.

- ◆ **Chatbots as virtual tutors:** TutorAI will generate a personalized lesson in response to a student's prompt.
- ◆ **Research assistants and editors:** PowerNotes can help students, educators, and other professionals gather resources and even provide citations. Similarly, Grammarly can help writers with their grammar and spelling, even making suggestions to improve writing style.

- ◆ **Career prep resources:** Interviews by AI creates a mock interview based on the job description that you upload and will provide real-time feedback. If students aren't that far along in their career search, CareerDekho is a great resource to help them learn about career paths and find a career of interest.
- ◆ **Note-taking assistants:** I enjoy using AudioPen to record my thoughts as I am reflecting on something that I have read. It then generates a cleaner text version, with grammar edits included. It can streamline the process of note-taking and capture ideas more quickly, leaving more time for focused writing or project work.
- ◆ **Content-creation tools:** Depending on the age of your students, using some of the previously mentioned text-to-image or text-to-video tools is a great option for enhancing the learning experience and also promoting accessibility. For example, Luma AI released a Discord bot called Genie, a text-to-3D AI tool. With Genie, users enter a text command and will then receive four 3D models that also have a link to download the object or simply view it. For boosting creativity, students can bring their ideas to life even without 3D modeling experience. The tool is also a benefit for anyone interested in game development.

And that list is just a start—it can feel overwhelming. In 2010 Apple trademarked its slogan *There's an app for that*, but now we can say, “There's AI for that.” As of March 2024, in fact, there are more than 12,500 AI tools for more than 17,500 tasks and 4,900 jobs, available for use on the site theresanaiforthat.com. After you explore the tools in this chapter, check out the site to discover (and try) the transformative technologies that are being developed. Search AI content detection tools, avatar makers, chatbots, image generators, online courses, presentation tools, video generators, website builders, and more.

Key Takeaways

In this chapter, we took a dive into the resources available for learning about and creating with generative AI and how to use ChatGPT. It is essential that students understand emerging technologies and how they work and to become creators. (*ISTE Standards 1.1.d Empowered Learner, 1.3.d Knowledge Constructor, 1.4.d Innovative Designer, 1.5.d Computational Thinker*)

For educators, it's essential to develop an understanding of these emerging technologies and prepare not only to provide learning experiences but also collaborate and co-learn with students. Staying current with research and mentoring students on ethical and

responsible use of these tools is critical. (*ISTE Standards 2.1.a Learner, 2.2.c Leader, 2.3.c Citizen, 2.4.b Collaborator*)

Educators must provide opportunities for students to explore and create. To do so requires ongoing professional learning and the sharing of that learning with colleagues and students. (*ISTE Standards 2.1.a Learner, 2.2.c Leader*)

Educators also need to actively review the tools and model the ethical and responsible use of these tools in the classroom. (*ISTE Standards 2.3.b and 2.3.c Citizen*)

Together, educators and students can discover new ways to leverage the tools available. (*ISTE Standard 2.4.b Collaborator*)

Scan the QR code to check for new tools; as I find tools and evaluate them for classroom use, I'll add them to the list.



tinyurl.com/ykt7c8z9

Questions for Reflection and Discussion

There are many options to explore for creating a variety of supplemental learning materials, and we can leverage the available tools to spark curiosity, meet students' individual needs and interests, and best prepare them for the future. After reading this chapter, take a moment to reflect on what you've learned.

- ◆ Reflect on a specific AI technology or use that you find interesting. How might you incorporate it into your teaching to spark curiosity and promote critical thinking among your students?
- ◆ What are some projects or activities that can encourage students to explore the boundaries and possibilities of AI?
- ◆ Imagine you need to create a project that showcases the capabilities of one of the AI types covered in this chapter. What would you create, and how could it benefit society or enhance learning?
- ◆ How can understanding the distinctions between AI types empower educators and students to make informed decisions about the AI tools they use?

Share your ideas with me on X (formerly Twitter) @Rdene915 or post a message on LinkedIn.